

What is claimed is:

1. A fuel gas production apparatus for reforming a hydrogen-containing fuel to produce a hydrogen-rich fuel gas, comprising:

a reforming mechanism for reforming the hydrogen-containing fuel to obtain a reformed gas;

a PSA mechanism directly connected to said reforming mechanism for removing impurities from said reformed gas to refine said reformed gas into said fuel gas,

wherein said reforming mechanism uses said hydrogen containing fuel, steam and oxygen to induce oxidation reaction and reforming reaction simultaneously.

2. A fuel gas production apparatus according to claim 1, further comprising a cooling mechanism provided between said reforming mechanism and said PSA mechanism.

3. A fuel gas production apparatus according to claim 1, wherein said hydrogen-containing fuel is methane.

4. A fuel cell system comprising:

a fuel gas production apparatus for reforming a hydrogen-containing fuel to produce a hydrogen rich fuel gas; and

a fuel cell using said fuel gas supplied from said fuel gas production apparatus,

wherein said fuel gas production apparatus comprises:
a reforming mechanism for reforming the hydrogen-
containing fuel to obtain a reformed gas; and

a PSA mechanism directly connected to said reforming
5 mechanism for removing impurities from said reformed gas to
refine said reformed gas into said fuel gas,

wherein said reforming mechanism uses said hydrogen
containing fuel, steam and oxygen to induce oxidation
reaction and reforming reaction simultaneously.

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5. A fuel cell system according to claim 4, further
comprising a cooling mechanism provided between said
reforming mechanism and said PSA mechanism.

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6. A fuel cell system according to claim 4, wherein
said hydrogen-containing gas is methane.

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7. A fuel cell system according to claim 4, further
comprising an air blower for supplying air to said fuel
cell.